Small Business Investment in London

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Abstract

London's finance industry is based in the City of London and Canary Wharf, the two major business districts in London. London is one of the preeminent financial centers of the world as the most important location for international finance. We are going to discuss what are the best venues which we can invest in London, we present an analysis made in python and we explain step by step how we can determine the top 10 venues for the best 3 Boroughs based on the demographic data, unemployment rate statistics which it is suggested to invest in London .

Introduction

London is one of the most attractive cities to do business in the world. It is the capital of both England and U.K. In fact, London is the world's leading financial center and offers a lot of business opportunities in sectors such as arts, commerce, education, entertainment, fashion, finance, healthcare, media, professional services, research and development, tourism and transport. In a recent survey carried out by the Confederation of British Industry, it was estimated that 90% of business owners rate London as a very fertile city for business.

London took over as a major financial center shortly after 1795 when the Dutch Republic collapsed before the Napoleonic armies. For many bankers established in Amsterdam (e.g. Hope, Baring), this was only time to move to London. The London financial elite was strengthened by a strong Jewish community from all over Europe capable of mastering the most sophisticated financial tools of the time.

The rate of business success in London is not unconnected to its good infrastructure, cultural diversity, and peaceful environment. Now there are a lot of businesses you can do in London ranging from Franchise business opportunities to small scale startups (businesses for sale). It doesn't even matter if you have little capital to invest. There are businesses that you can even start without capital. The key is to understand how and where to invest your money.

Purpose of the project: Analyze the types of small business in London and identify where we can put a new one and the structure of this work has five sections: **1** Getting the data, **2** Data wrangling**, 3**Methodology **4** Data analysis, **5** Results and Discussion.

1. Getting the data

First at all we are going to use iPython based in phyton 3.6 to do the analysis.

In the setup part we simply need load all the libraries needed to do this study we require many libraries, such as BeautifulSoup, for web scrapping, numpy to handle data in a vectorized manner, pandas for data analsysis, Jjson library to handle JSON files, the library geopy, which helps to convert an address into latitude and longitude values ,nominatim is the library to handle requests ,matplotlib and associated plotting modules kmeans library to deal with k-means from clustering stage,the time library and the map rendering library folium.

1.2 Selecting the data

In ordering to determine the area of London where we have to do the investment, we require take some data from the London's Poverty Profile 2017 and Annual Population Survey via Nomis, ONS. given at the Trust for London [1], and New Policy Institute [2]. The unemployment ratio is the proportion of the working-age population that is unemployed, and in the unemployment ratio by borough in London is showed in the following figure, that is obtained and we got the following figure:

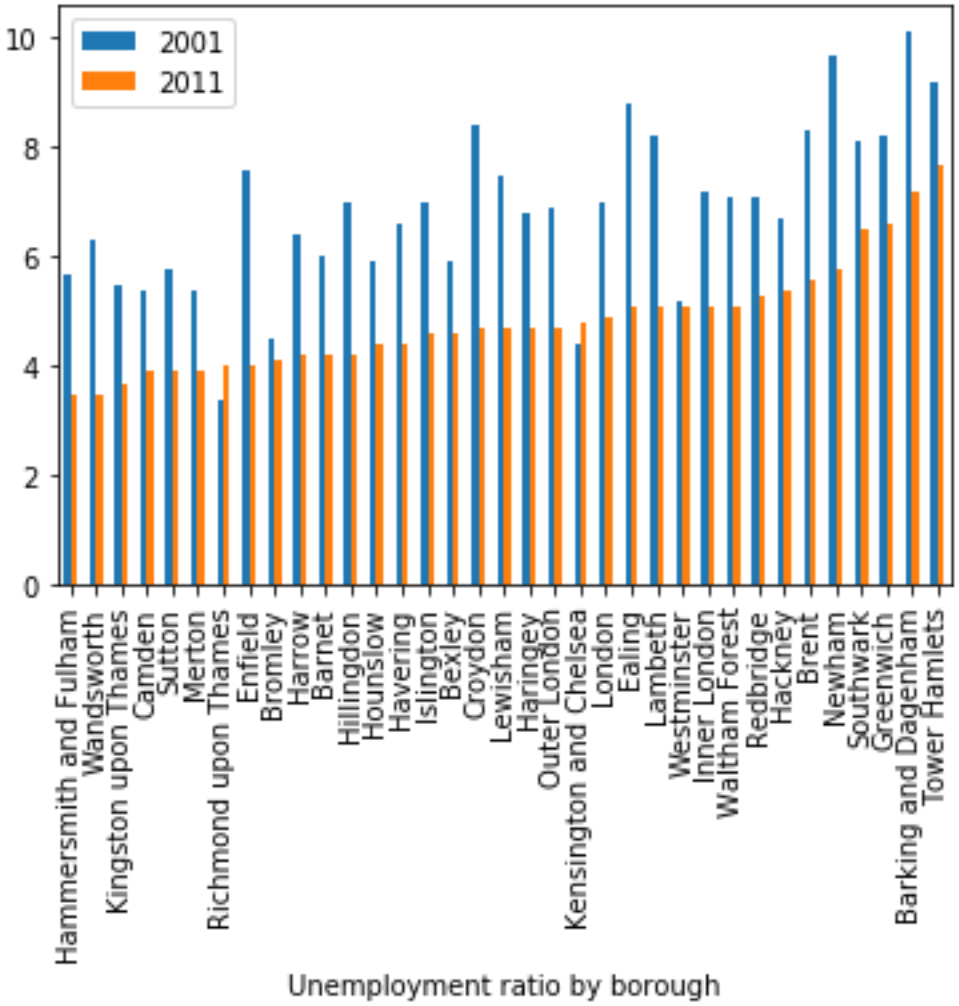

Fig 1.0 Unemployment ratio by Borught, 2001 vs 2011, taken data from Refs. [1], [2].

This Figure 1 shows that the ratio has come down significantly in almost all London boroughs in a relatively short timescale.

The top 3 boroughs with lowest unemployment ratio in 2011 are :

1. Hammersmith and Fulham
2. Wandsworth
3. Kingston upon Thames

Now if we compare with the change of Change in unemployment ratio 2011-13 to 2014-1, the lowest unemployment ratio by borough we go the following Figure:

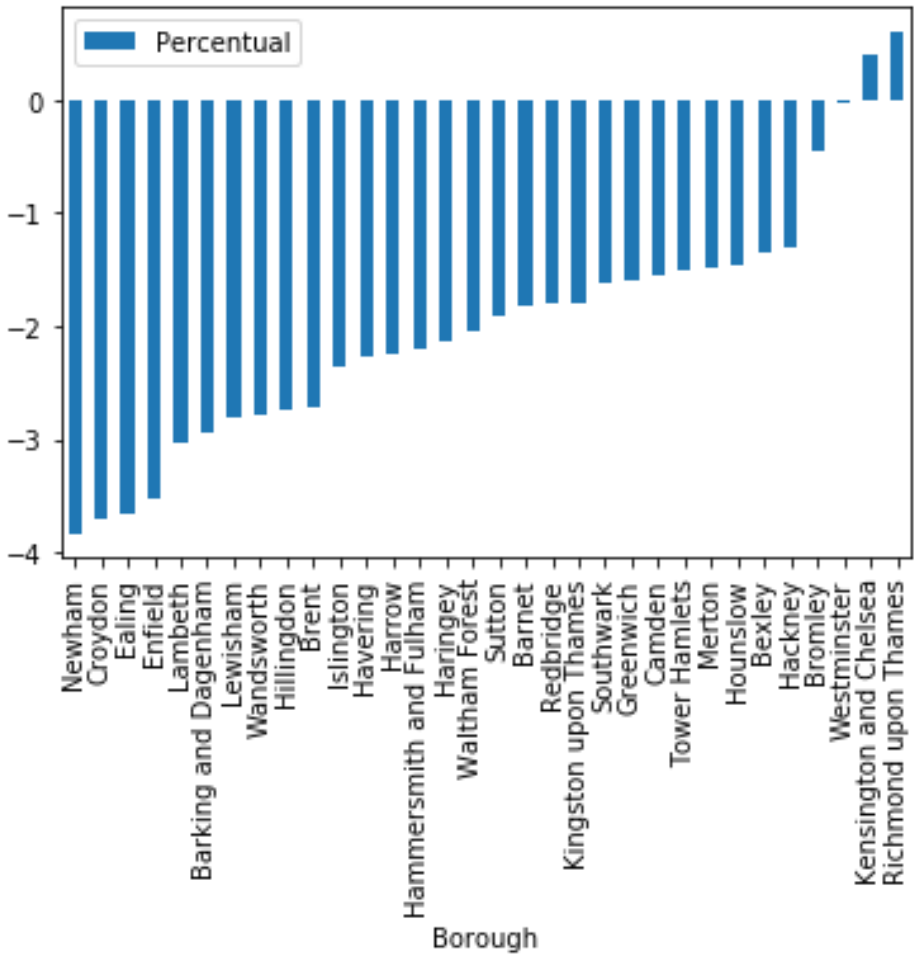

Fig 2.0 Change in unemployment ratio 2011-13 to 2014-1 taken data from Refs. [1], [2].

The highest change unemployment ratio are for the Boroughs:

1. Newham
2. Croydon
3. Ealing

But this fact does not guarantee that will be a good place to invest. So, in ordering to be sure about which Borough should be the best to invest, we consider the average percentual, this can be a good indication to determine which Borough we should choose.

The average of the change unemployment ratio that is -1.9897% therefore around -1.98% the Borough s hould be stable.

1. Hammersmith and Fulham has -2.200%
2. Haringey -2.134%
3. Waltham Forest -2.036%

We have those three candidates, but due to Hammersmith and Fulham has the lowest Unemployment, a good candidate to invest is **Hammersmith and Fulham** which is located in the South West and North West of London. Thus, we are going to explore what are the possible small business what have a trend over the South West of London.

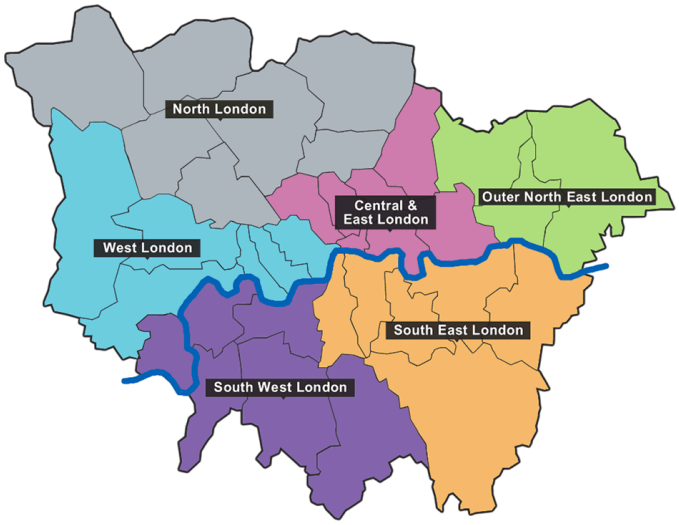

Fig 3. Locations of London

One of the strongest regions and cities on the planet is London. It's highly attractive, and it offers one of the best prospects for business development and innovative thinking. London is the showcase for our work throughout Europe and is paramount in our global strategy.

2. Data wrangling

Data wrangling sometimes referred to as data munging, is the process of transforming and mapping data from one "raw" data form into another format with the intent of making it more appropriate and valuable for a variety of downstream purposes such as analytics. In this section we are going to extract more data from different sources of London and transform them into dataframes in ordering to perform the analytics.

2.1 Exploration of the city of London

In order to transform data from websites into data which we can process we require use a great tool called BeautifulSoup, we load the libraries and we get the List of areas of London.
The first step is getting the List of areas of London from Wikipedia [3] and obtain the data frame.
Due to the limit of the number of requests that we can ask to Foursquare we have to
do some assumptions to reduce the amount of data that we want to process.
The postcodes are spread to multi-rows and assigned the same values from the other columns.
From the data, only the 'Location', 'Borough', 'Postcode', 'Post-town' will be used. Now, only the Boroughs with London Post-town will be used for our search of location. Therefore, all the non-post-town are dropped.

Due to the study of the Boroughs, Hammersmith and Fulham are in the North West and South West areas of London, for this project the South West will be considered for our analysis. The south west areas have postcodes starting with SW.

In addition, an extra condition we are going to consider is that regions where the numbers of one race is predominant in one multicultural place may be not the be in equilibrium. In the sense that people from other races inside can be feel not quite comfortable, making not good customer to sell something, thus in ordering to avoid that, we omit places where the t predominance or lack of one.

So, taking the data of the proportion of races by London borough, as found in Wikipedia [4] we focus on the demography of London for white people.

The average of white people in all London is 61.58% so we are going to consider the upper limit of this mean value and taking the top 6 areas with white people around > 61.58% we obtain the following list of Boroughs:

1. Hammersmith and Fulham 68.1%
2. Camden 66.3%
3. Merton 64.9%
4. Barnet 64.1%
5. Greenwich 62.5%
6. Westminster 61.7%

The previous list represent good candidates to do the exploration.

3. METHODOLOGY

With the Foursquare site, we are going to obtain a data set of stores around specific locations, which will be stored into a data frame and with that, it is possible to do the analytics.

First, we will proceed with the exploration and the collecting of data over a single Neighborhood and later we proceed the same procedure with multiple Neighborhoods storing a data frame.

The following step consisting in determine the cluster of the venues by location and identify the top most common venues by cluster.

3.1 Data Exploration

Single Neighbourhood

An initial exploration of a single Neighbourhood within the London area was done to examine the Foursquare.
It is explored the top 50 venues that are within a 1500 meters radius of Fulham, we create the url request and by using Foursquare we obtain the top nearby venues and they are: *cafe, pizza place, pub, grocery store and fish & chips Shop.*

Multiple Neighborhoods
In ordering to repeat the previous procedure applied to multiple Neighborhoods, we define a function which can be used iteratively and therefore we obtain many unique categories.

However, it is enough from those results identify which are the best venues because there are several locations thus are going to consider an extra condition to constrain more our data, and is consider a cluster of venues from our data results and from them identify the frequency and identify which are the most common venues for each cluster.

3.2 Clustering

Performing the clustering of the venues we have 4 positions on London (see Fig 3.0) Those clusters points corresponds to our four postcodes that we want to analyze, and those hose positions have the following locations indicated in the Table 1.0

	Location	Borough	Postcode	Latitude	Longitude
0	Belgravia	Westminster	SW1	51.49713	-0.13829
1	Colliers Wood	Merton	SW19	51.42170	-0.20796
2	Fulham	Hammersmith and Fulham	SW6	51.47772	-0.20145
3	Knightsbridge	Westminster	SW1	51.49713	-0.13829
4	Merton Park	Merton	SW19	51.42170	-0.20796
5	Millbank	Westminster	SW1	51.49713	-0.13829
6	Parsons Green	Hammersmith and Fulham	SW6	51.47772	-0.20145
7	Pimlico	Westminster	SW1	51.49713	-0.13829
8	Raynes Park	Merton	SW20	51.41117	-0.22623
9	Sands End	Hammersmith and Fulham	SW6	51.47772	-0.20145
10	South Wimbledon	Merton	SW19	51.42170	-0.20796
11	St James's	Westminster	SW1	51.49713	-0.13829
12	Westminster	Westminster	SW1	51.49713	-0.13829
13	Wimbledon	Merton	SW19	51.42170	-0.20796
14	Wimbledon	Merton	SW20	51.41117	-0.22623

Table 1.0 Locations of the South West of London.

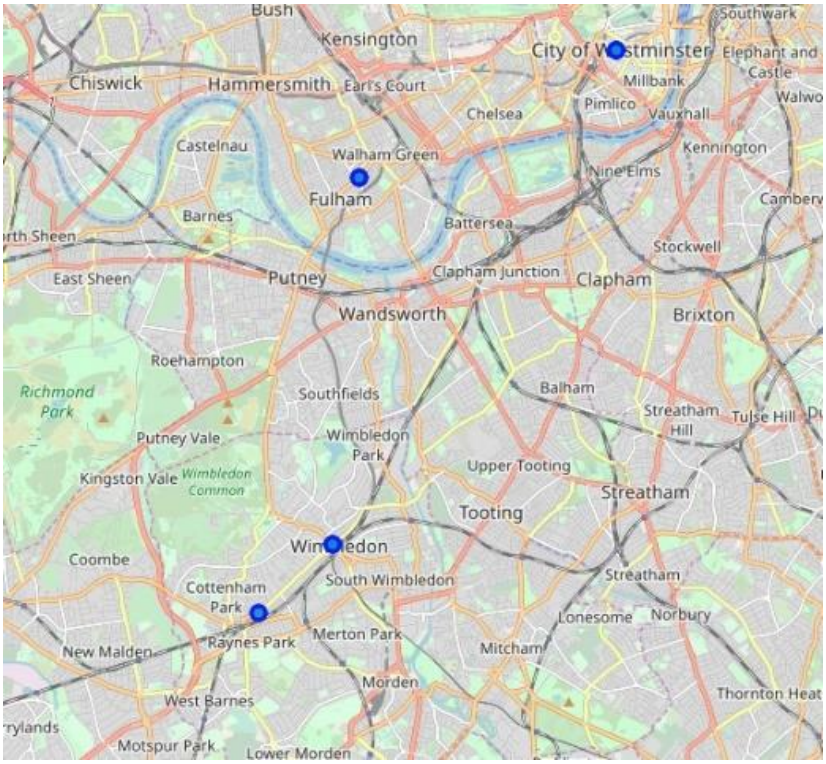

Fig 3.0 Cluster points of the Multiple Neighborhoods in the South West of London.

4. Data analysis

In this section, the objective is to check and explore the venues in each neighborhood.
Regrouping and performing the Statistics of each Neighborhoods with 10 common venues , creating data frame and getting the common venues into pandas data frame putting them in descending order. We create a new dataframe that includes the clusters as well as the top 10 venues for each neighbourhoods and then create clusters of the neighbourhood using the k-means to cluster the neighbourhood into 5 cluster This allows us have a new dataframe that includes the clusters as well as the top 10 venues for each neighbourhoods.

5. RESULTS

To visualize the clusters, we have the following

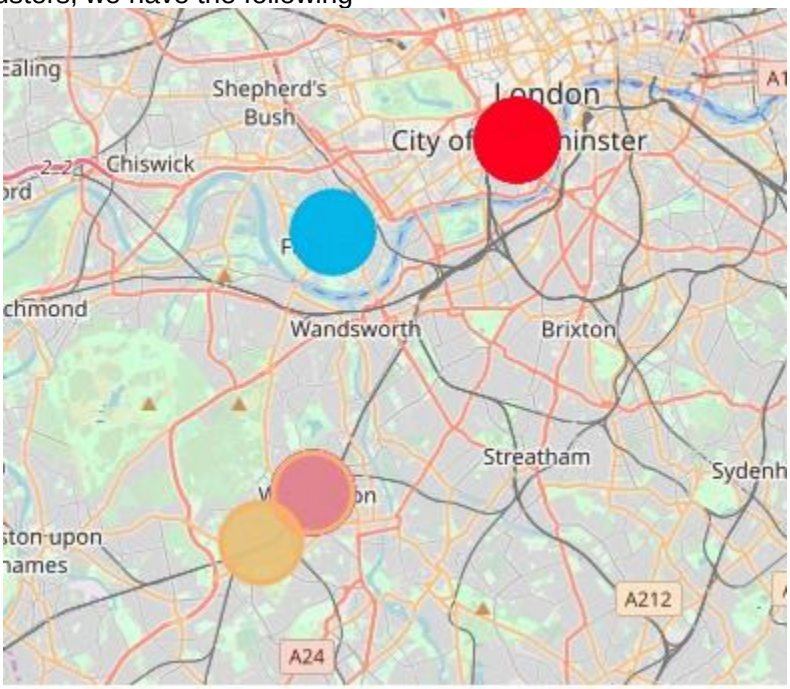

Fig 4.0 Venue clusters of London

The individual clusters data frame can be obtained

Table 2 .0 Cluster 1

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store
3	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store
5	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store
7	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store
11	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store
12	Westminster	0	Hotel	Theater	Coffee Shop	Sandwich Place	Juice Bar	Sushi Restaurant	Indian Restaurant	Movie Theater	Modern European Restaurant	Clothing Store

Table 3 .0 Cluster 2

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	Merton	1	Pub	Coffee Shop	Sushi Restaurant	Bar	Indian Restaurant	Stationery Store	Burger Joint	Grocery Store	Movie Theater	Mexican Restaurant
4	Merton	1	Pub	Coffee Shop	Sushi Restaurant	Bar	Indian Restaurant	Stationery Store	Burger Joint	Grocery Store	Movie Theater	Mexican Restaurant
10	Merton	1	Pub	Coffee Shop	Sushi Restaurant	Bar	Indian Restaurant	Stationery Store	Burger Joint	Grocery Store	Movie Theater	Mexican Restaurant

Table 4 .0 Cluster 3

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2	Hammersmith and Fulham	2	Café	Coffee Shop	Italian Restaurant	Pub	Yoga Studio	Grocery Store	Wine Shop	Park	French Restaurant	Climbing Gym
6	Hammersmith and Fulham	2	Café	Coffee Shop	Italian Restaurant	Pub	Yoga Studio	Grocery Store	Wine Shop	Park	French Restaurant	Climbing Gym
9	Hammersmith and Fulham	2	Café	Coffee Shop	Italian Restaurant	Pub	Yoga Studio	Grocery Store	Wine Shop	Park	French Restaurant	Climbing Gym

Table 5.0 Cluster 4

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
8	Merton	3	Bus Stop	Platform	Grocery Store	Fast Food Restaurant	Coffee Shop	Pharmacy	Indian Restaurant	BBQ Joint	Trail	Bakery

Table 6 .0 Cluster 5

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
13	Merton	4	Coffee Shop	Pub	Grocery Store	Bus Stop	Sushi Restaurant	Indian Restaurant	Bar	Burger Joint	Platform	Gym / Fitness Center
14	Merton	4	Coffee Shop	Pub	Grocery Store	Bus Stop	Sushi Restaurant	Indian Restaurant	Bar	Burger Joint	Platform	Gym / Fitness Center

Conclusion

According to the latest Land Registry figures Westminster is one the most expensive boroughs to buy a property to live in London. Slightly less than a million – £990,896, is the average cost of property to buy in City of Westminster. However, considering having a view on London Eye or Big Ben while eating breakfast, house prices in this area sound to be reasonable. The Hammersmith and Fulham has avg. £784,613 cost of property.

So the conclusion should be invest in one of the common venue:

HAMMERSMITH AND FULHAM

1. Café
2. Coffee Shop
3. Italian Restaurant
4. Pub
5. Yoga Studio
6. Grocery Store
7. Wine Shop
8. Park
9. French Restaurant
10. Climbing Gy

WESTMINSTER

1. Hotel
2. Theater
3. Coffee Sho
4. Sandwich Place
5. Juice Bar
6. Sushi Restaurant
7. Indian Restaurant
8. Movie Theater
9. Modern European Restaurant
10. Clothing Store

MERTON

1. Pub
2. Coffee Shop
3. Sushi Restaurant
4. Bar
5. Indian Restaurant

6. Stationery Store
7. Burger Joint
8. Grocery Store
9. Movie Theater
10. Mexican Restauran

which is based on cluster 2.

REFERENCES

[1] Annual Population Survey via Nomis, ONS. and London's Poverty Profile 2017 http://www.trustforlondon.org.uk/data

[2] Trust for London, and the independent think tank, New Policy Institute https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?theme=25.

[3] https://en.wikipedia.org/wiki/List_of_areas_of_London

[4] https://en.wikipedia.org/wiki/Demography_of_London